1980s, the FCC imposed important changes on the structure of access fees—early in the decade, most of the fee was imposed as a per-minute charge on long-distance calls, whereas by the end of the decade, part of the fee had been shifted to a fixed monthly charge per telephone line. These access fees have declined substantially since 1984, but long-distance carriers still pay about 40 percent of their revenues to local telephone companies as access charges.[4]

18. Some of Southwestern Bell's experts, particularly Professor Kahn and Dr. Tardiff, have concluded that the decline in long-distance rates was due entirely to the reduction in access charges.[5] In this section I will show, on the contrary, that long-distance prices have fallen, relative to the general price level, even when access charges are netted out. Competition and productivity growth have been important factors in the improved performance of the long-distance industry over the past decade.

19. The table below shows gross revenue per minute for the three largest carriers on the top line, stated as 1996 dollars per minute. The table also shows the industry average access charge per minute of call, again in 1996 dollars per minute.[6] The average access charge fell from 18 cents per minute in 1985 to nearly 6 cents in 1996 (in 1996 dollars). Revenue per minute after subtracting access costs fell from 33 cents per minute in 1985 to 9 cents in 1996 (in 1996 dollars), a decline of 72 percent. Claims that the only reason for the decline in long-distance prices is the declining cost of access are incorrect.

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[4] *Telecom Service - Long Distance,* Merrill Lynch & Co., Global Research & Economics Group, 1996, Table 6.

[5] *Affidavit of Alfred E. Kahn and Timothy J. Tardiff on Behalf of Southwestern Bell in Oklahoma, (Kahn-Tardiff Affidavit)*, April 1997, p. 7.

[6] This calculation is based on the assumption that there are two minutes of access per minute of call (approximately one minute on the originating end and one minute on the terminating end). It also adjusts for call setup time and for access by means other than the local switched network.

| *Year* | *Revenue per minute, 1996 dollars* | *Access charge per minute, 1996 dollars* | *Revenue per minute net of access charges, 1996 dollars* |
|---|---|---|---|
| 1985 | .515 | .184 | .332 |
| 1986 | .413 | .168 | .245 |
| 1987 | .328 | .140 | .188 |
| 1988 | .302 | .124 | .178 |
| 1989 | .267 | .107 | .160 |
| 1990 | .222 | .089 | .133 |
| 1991 | .200 | .078 | .122 |
| 1992 | .190 | .073 | .117 |
| 1993 | .178 | .070 | .108 |
| 1994 | .168 | .068 | .100 |
| 1995 | .151 | .064 | .088 |
| 1996 | .145 | .058 | .087 |

For details of these calculations, see Appendices A and B.

20. The table shows that the fall in the price of long-distance service net of access charges occurred in both the period immediately following divestiture and in more recent years. Although falling access charges were an important factor in the substantial decline in the price of long distance over the period, other factors were also significant, reflecting the successful performance of the competitive long-distance industry in the United States.

21. Jim Lande of the Industry Analysis Division, Common Carrier Bureau of the FCC, has made calculations of revenue per minute for interstate direct dialed calls.[7] His results are:

[7] "Telecommunications Industry Revenue: TRS Fund Worksheet Data," December 1996.

| *Year* | *Revenue per minute, net of access charges, for a direct dialed call in 1996 dollars* |
|---|---|
| 1992 | $0.086 |
| 1993 | 0.083 |
| 1994 | 0.078 |
| 1995 | 0.074 |

Net of access charges, revenue per minute in 1996 dollars fell by 18 percent over the three years from 1992 to 1995. Lande's results strongly confirm the hypothesis that declining access charges were only one of the factors leading to the declining price of long distance.[8] The growing efficiency and improving competitive performance of the industry also made a large contribution, as is revealed by the data calculated net of access charges.

## *E. Issues in the Measurement of Prices*

22. Southwestern Bell's experts Professor Kahn and Dr. Tardiff and Michael Raimondi in the WEFA study take a very different approach to the measurement of long-distance prices.[9] They rely on the Consumer Price Index for interstate long-distance prices. Southwestern Bell's brief and Raimondi's affidavit also draw upon the analysis of prices from Professor Paul MacAvoy's book.[10] My results, as discussed above, show much greater price declines. Although my research in this

[8] Differences between Dr. Lande's calculations of revenue per minute and mine include the following: (i) he uses only DDD calls; I include all calls; (ii) he uses only interstate data; I use interstate and intrastate data; (iii) he uses actual minutes; I use billed minutes; (iv) he uses average access charges; I use marginal access charges; (v) he includes all carriers, I include only AT&T, MCI, and Sprint.

[9] *Kahn-Tardiff Affidavit*, p. 7; *Affidavit of Michael Raimondi on Behalf of Southwestern Bell in Oklahoma*, April 1997; *The Economic Impact of Southwestern Bell's Entry into the InterLATA Long Distance Markets in Oklahoma, (The WEFA Study)*, prepared by The WEFA Group, April 1997, p.9.

[10] *Brief in Support of Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Oklahoma*, April 11, 1997, p. 59; *op. cit.*, p. 10; MacAvoy, Paul W., *The Failure of Antitrust and Regulation to Establish Competition in Long-Distance Telephone Services*, 1996.

area has been available to them for the past three years, Southwestern Bell's experts do not discuss the differences between their approach and mine.

23. As I discussed above, the CPI is an unreliable measure of the price of long-distance service because it omits data on the prices paid by the great majority of long-distance users. Professor Kahn and Dr. Tardiff report declines in access charges of about 11 cents since divestiture. By their measure, prices have fallen 9 cents from 1984 to 1994, less than the decline in access prices. Professor Kahn and Dr. Tardiff conclude that residential prices have risen by 2 cents per minute in relation to access charges.[11] This conclusion is purely an artifact of errors in measuring the price. As my analysis above shows, the price has fallen from 51.5 cents per minute to 14.5 cents since divestiture. The price has fallen 27 cents during the period when the access charge fell by 11 cents. Kahn and Tardiff's measure of price is completely misleading because it fails to measure changes in prices from the massive switchover to low-price plans.

24. Each long-distance carrier sells its products under numerous pricing plans. Among these is a higher rate called the standard rate. This rate is charged to a customer who signs up for service without asking about the rates that are available and without being attracted by the promotion of a better rate. Standard rates are in the range of 28 cents per minute during the day and 18 cents in the evening; they are also slightly differentiated by distance. These rates have the same role that "full fares" have in the airline business—they are paid for a small fraction of the total volume of sales by people who cannot or will not arrange their lives to receive much better prices. The standard rates of AT&T, MCI, and Sprint are quite similar and tend to move together. They have been rising somewhat in the past few years, most recently in November 1996.

25. Most long-distance service is purchased at far better prices than the standard rate, just as a large fraction of all airline travel is at fares that are far below the full fare. In the airline market, better fares are available in two ways: First, businesses negotiate special fares directly with airlines. Second, for individual travelers, airlines quote highly advantageous fares for travelers who take the trouble to make their arrangements in advance. Full fare transcontinental travel costs about 35 cents a mile whereas the cheaper fares are around 9 cents per mile. Similarly, the long-distance caller who seeks out a good deal can make calls across the country for 10 cents a minute. And the price paid by businesses can be pushed down even

[11] *Kahn-Tardiff Affidavit*, p. 11.

more if a way can be found to avoid the access charges of around 5 cents that would otherwise place an absolute floor on long-distance prices.

26. Here is a list of some of the deals that long-distance carriers currently offer for residential customers in Oklahoma:

| *Carrier* | *Name of plan* | *Terms* |
|---|---|---|
| AT&T | One Rate Plus | 10 cents per minute at any time, $4.95 per month |
| MCI | MCI One | 12 cents per minute at any time for purchases over $25 per month, 15 cents per minute for first $25 |
| Sprint | Sprint Sense Day Plan | 15 cents per minute at any time, no fee, no minimum purchase |
| WorldCom | Home Advantage | 11 cents peak, 10.2 cents offpeak, with one-year commitment. |
| Wiltel | | 10.9 cents per minute at any time, no fee, no minimum |
| Telco Communications | Long-Distance Wholesale Club | 9.5 cents per minute plus $4.95 per month |
| VarTec Telecom | Dime Line | 10 cents per minute, 3 minute minimum, $5 per month |
| Frontier | | 10.9 cents per minute at any time, no fee, no minimum |

Sources: Carriers and *Wall Street Journal*, "Coy Telecom Giant Woos AT&T's Customers," April 15, 1997, p. B1.

These rates are substantially lower than rates available even a year ago. The prices paid for most calls have fallen even though standard rates have risen.

27. These results confirm the importance of low-price plans in evaluating the performance of the long-distance market. Southwestern Bell's experts are oblivious to the structure of long-distance pricing. Much of their analysis deals with standard

rates, particularly when they discuss how prices change over time.[12] Their only mention of other rates is in connection with the prices paid by low-usage customers.[13] The WEFA Study and the Southwestern Bell brief presume that lower rates are stated as percentage discounts off standard rates.[14] Were this the case, and were the percentage discounts stable, then actual prices paid would track changes in standard rates. Actual prices would have risen in the past few years. But reality is just the opposite. As the sharp decline in revenue per minute shows, actual prices have been declining in the last few years, just as they did in earlier years. The percentage difference between standard rates and bargain flat rates has risen dramatically and is continuing to rise.

28. Almost 80 percent of MCI's customers use plans other than the standard rate.[15] Many of the advantageous plans described above are available to all users, regardless of their level of usage. Moreover, the availability of these plans is a frequent discussion point in newspapers and magazines. Some of the lowest rates are available without presubscription—you can take advantage of the 9.5 cents per minute rate from the Long-Distance Wholesale Club by dialing their access code, 10297, without any preliminary arrangement.

29. The discussion of long-distance prices in Southwestern Bell's brief is particularly misleading. The chart on page 58, labeled "Recent Trends in Long-Distance Rates and Exchange Access Charges," shows only the standard rates, which I have shown are almost meaningless—the prices actually paid, on the average, are about half the level shown in the chart. Footnote 48 suggests that 60 percent of AT&T's customers are "ineligible for discounts." In fact, any customer, of any size, can benefit from AT&T's One Rate plan—there is no minimum volume and no monthly fee. The discussion of what has happened to older pricing plans in footnote 49 is utterly misleading because it fails to mention the introduction of flat-rate plans that offer much lower prices than the plans that were being phased out. The statement on page 61, "These [flat-rate] plans have failed to reduce the cost of long distance calling for most customers," is flatly erroneous, as the dramatic reduction in revenue per minute that occurred in 1996

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[12] *Kahn-Tardiff Affidavit,* p. 7; *The WEFA Study,* pp. 9, 10.

[13] *Kahn-Tardiff Affidavit,* p. 11; *The WEFA Study,* p. 10.

[14] *The WEFA Study,* p. 10; *Southwestern Bell Brief,* p. 60.

[15] Based on MCI data. See elaboration in Section IIIF, Prices Paid by Small Long-Distance Customers.

shows. And the citation in the next sentence of an increase in the Consumer Price Index in 1996 fails to note the well-known defect of that index, which relies exclusively on standard rates and does not measure the rates actually paid by consumers.

### *F. Prices Paid by Small Long-Distance Customers*

30. Professor Kahn and Dr. Tardiff conclude that the long-distance industry is non-competitive because small customers do not receive the same benefits as large customers. I believe that their analysis fails to take proper account of the costs of recruiting and serving low-volume customers. Professor Schmalensee suggests that the low-usage customer has failed to benefit from the increased competition among interexchange carriers.[16] Similarly, Dr. Gordon concludes that low-volume residential customers have not benefited from volume-based discount plans.[17] Professor Kahn and Dr. Tardiff cite price declines of 80 percent for business but only 29 percent for residential customers (based on the erroneous CPI).[18] The flat-rate bargain plans that provide the most attractive residential prices today are not volume based. These low-price plans are open to all users.

31. In fact, most residential customers take advantage of flat-rate low-price plans. I have studied data from MCI on the distribution of customers and revenue across pricing plans, for residential customers. About 22 percent of MCI's residential customers pay under the standard rates—the remaining 78 percent use plans with lower rates, some of which depend on volume. Not surprisingly, those using the standard rate tend to spend little on long distance. In the month I examined, 12 percent of MCI's residential revenue came from customers using the standard rate. The remaining 88 percent of MCI's residential business was with customers using more advantageous price plans.

32. Professor Schmalensee cites contrary data from PNR and Associates that 65 percent of residential customers pay standard prices rather than using lower-price plans. First, a substantial number of these customers, perhaps as many as one-

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[16] *Schmalensee Affidavit*, p. 7.

[17] *Affidavit of Kenneth Gordon*, p. 10.

[18] *Kahn-Tardiff Affidavit*, p. 11.

fourth, do not subscribe to a low-price plan because they have no toll usage.[19] More importantly, the PNR sample is badly biased, through its construction, in favor of smaller users.

33. PNR wrote to 25,000 households requesting copies of their local telephone bills, long-distance bills, cable TV bills, and cellular bills. PNR paid $5 to each responding household. PNR received telephone bills from 8,731 households, for a response rate of about 35 percent.[20] Whenever a survey is performed, an analysis of non-respondents must be done to insure that the respondents are not biased, particularly when the response rate is this low. No such study has been done to validate the PNR sample, to my knowledge. There is a presumption that the response rate will be highest in lower-income households, to whom the $5 payment is more significant. No conclusion about long-distance customers in general can possibly be drawn in view of the bias.[21]

34. The bias from selective response appears to be serious. MCI has carried out a comparison of data from PNR on purchases from MCI with similar data on purchases by all of MCI's customers. According to PNR, about 54 percent of MCI residential customers spent $10 or less on long distance. In the MCI data, the corresponding fraction is only 32. Plainly, the highest usage customers were under-represented in the sample. This analysis of MCI suggests that Professor Schmalensee's estimate that 65 percent of telephone customers pay standard long-distance rates is a serious overstatement.

## G. *Issues in the Measurement of Cost*

35. The measurement of cost is equally a source of disagreement between Southwestern Bell's experts and me. Economists generally agree that the relation between price and marginal cost is useful for understanding issues about competition and performance. But making useful inferences about industry performance from the relation of price to marginal cost is a challenge. Although

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[19] PNR and Associates provided MCI with promotional documents for a program known as Bill Harvest II. The discussion in this paragraph and the next are based on these documents.

[20] *Ibid.*, PNR information about Bill Harvesting II.

[21] All of the BOCs' experts have been on notice since 1995 that they were making inappropriate use of the PNR data, yet they continue to cite the PNR results without responding to criticisms of which they must be aware.

the textbook perfectly competitive industry sets its marginal cost equal to price, it is difficult to relate departures from that equality into a suitable measure of performance. An industry could have marginal cost below price but still be workably competitive. In such an industry, the potential entrant would not perceive profit. The attention to price-cost margins given by Professor Kahn and Dr. Tardiff is unhelpful because they fail to consider all of the costs involved in making a call. The hardware costs of the network can be measured, but appear to be a small part of the total cost. Access charges are the single largest component of cost and are easy to measure. The remaining 5 cents or so of cost are in areas such as customer service, billing, and other office-based activities that are hard to measure on a marginal basis.

36. One approach to measuring cost is to look at the very best prices charged for different long-distance services. Long-distance transport sells for about 1.5 cents per minute, which is in line with estimates of network costs. It appears that the best available price for switched long-distance for offices or homes is a little below 10 cents per incremental minute, about 4 cents above access charges. However, this price is offered to customers with little customer service, so it may understate marginal cost for some other types of customers. In addition, it is important to keep issues of time of day and peak loads in mind. Service during peak periods should bear the entire responsibility for the cost of capacity. Network cost calculations do not typically state their results with this principle in mind.

37. In my opinion, Professor Kahn and Dr. Tardiff measure marginal cost in a way that bears little relation to the concept of marginal cost relevant for the comparison to price and the measurement of profit margins. They estimate that the incremental cost of an additional message minute is no more than 2 cents per minute, excluding access. Adding this to a measure of access cost, they compute a total marginal cost of 8 cents per minute, and they arrive at a markup by AT&T of 10 cents per minute.[22] This calculation is equivalent to measuring the marginal cost of a shoe from the wholesale cost of its leather. They omit almost all the elements of cost that account for employment in the long-distance industry. According to Kahn and Tardiff, then, a long-distance carrier never has to bill a customer and never has to handle a customer service call.

38. In a footnote, Professor Kahn and Dr. Tardiff reference the book *Talk is Cheap,* by Robert Crandall and Leonard Waverman. These authors attempt to measure

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[22] *Kahn-Tardiff Affidavit,* p. 9.

marginal cost and include some of the cost components ignored by Kahn and Tardiff. Crandall and Waverman, in their recent affidavit in the Ameritech Michigan filing (which is more recent than their book) calculate a higher marginal cost than quoted by Kahn and Tardiff. Crandall and Waverman calculate that Ameritech's marginal cost is in the range from 11.4 cents to 12.4 cents per minute, if Ameritech incurs the same costs as AT&T for marketing, customer service, and overhead.[23] They believe that some of AT&T's costs may be higher than Ameritech's would be, but still their estimates indicate that a figure for marginal cost of around 10 cents per minute for Ameritech may be reasonable. This indicates that the range for the markup of long-distance carriers is 2.2 cents to 3.2 cents, considerably less than the 10 cents calculated by Kahn and Tardiff.

## *H. Profit Margins Earned by Long-Distance Carriers*

39. Professor Kahn and Dr. Tardiff conclude that long-distance price-cost margins are high and rising for residential customers.[24] They are incorrect on both counts. Their use of standard higher prices rather than the bargain prices paid for most calls overstates the levels of prices and understates how prices have fallen recently. Their omission of many important categories of cost causes them to understate marginal cost. Consequently, they considerably overstate the price-cost margin. The same errors disable their data on the change in margins over time. Because favorable price plans are more important now than in earlier years, their neglect of the changing use of these plans over time causes them to conclude that margins are rising.

40. The conclusion of Professor Kahn and Dr. Tardiff that prices far exceed cost is paradoxical in view of the lack of barriers to entry in long distance. If true, their margin estimate would dictate that every business with any expertise in communications would be rushing into an industry where output can be sold for more than its cost. Although many new companies are in the process of developing their long-distance businesses, the industry is not experiencing the flood of market entrants that Kahn and Tardiff's wide profit margin would predict.

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[23] *Volume 3.1: Joint Affidavit of Robert Crandall and Leonard Waverman on Behalf of Ameritech Michigan*, In the Matter of Ameritech Michigan Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Michigan, p. 45.

[24] *Kahn-Tardiff Affidavit*, p. 12.

## *I. Cost Differentials among Customers and Corresponding Price Differentials*

41. It is well known that customers with higher volumes pay less per minute for long-distance service. Some economists have been concerned that these price differences arise from the type of price discrimination that occurs when sellers have market power. Alternatively, the price differences could reflect cost differences. Pure price discrimination, not based on cost differentials, will not exist in a textbook perfectly competitive market. Price differences based on cost differences will occur even in perfect competition. In the long-distance industry, there is good evidence that favorable prices promoted mainly to high-volume customers (a common form of price differential in the industry) are the result of cost differences rather than pure price discrimination.

42. The costs that a long-distance carrier incurs to serve an additional customer for an additional month are substantial. A major component is the cost of billing. According to MCI, the cost of billing a customer with a single long-distance call is about $.48 per month (based on MCI's contracts with RBOCs). Another major component of the cost of an additional customer is the charge per presubscribed line for the Universal Service Fund. This charge is about $.50 per line per month. Thus, an additional customer costs about $.98 per month. Professor Kahn and Dr. Tardiff note that AT&T has estimated that sales to consumers with less than $3 in calls per month are non-remunerative.[25]

43. As I have noted earlier, there has recently been a shift toward simplified flat-rate long-distance plans and away from explicit quantity discounts, though some flat-rate plans have minimum charges. Higher-usage customers are more likely to take the trouble to seek out the best flat-rate plans. Long-distance carriers are likely to target known large users for their flat-rate promotions, because it is not worth the effort of contacting the low-usage customer.

44. If the higher rates per minute paid by the smallest customers are the result of pure price discrimination and do not reflect differences in costs, including the promotional costs of signing up the customers, then there would be an important arbitrage opportunity for resellers. Because a reseller can buy service cheaply at high-volume low prices and resell the services at higher prices to small customers, the reseller makes substantial profits when prices depart from costs. As I have

[25] *Id.* p. 13.

discussed, there is an active market for resold service—there are at least 260 resellers of long-distance service. I find it unlikely that there are large profits available to resellers that they have failed to pursue, despite the vitality of the reselling business. A more reasonable explanation is that there is an additional cost to recruit and serve each customer. As a result, carriers offer low prices to large customers, as would be expected under competition, to reflect the recruiting cost and the fixed monthly cost of serving a customer.

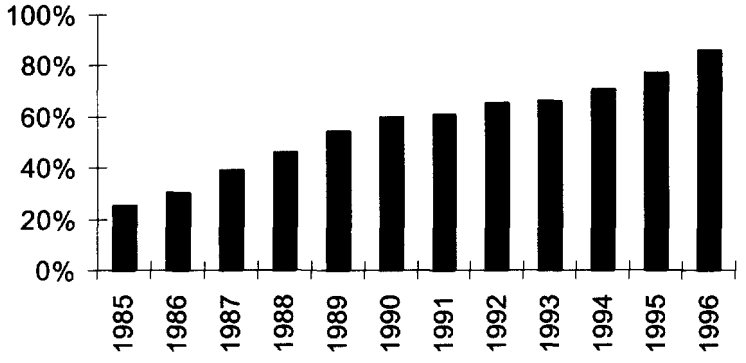
## *J. Technical Improvements and New Services since Divestiture*

45. Even the occasional user of long distance in the United States is aware of the tremendous improvement in the quality of service in the past decade. Background noise, cross-talk, echoes, and dropped calls have essentially disappeared from long-distance calls. The usefulness of one minute of telephone conversation has risen over the period at the same time that the cost of that minute has fallen dramatically. Fiber optics account for much of the improvement. State of the art fiber network has advanced from under a billion bits per second in 1986 (capacity for 10,000 simultaneous phone calls) to 1.76 billion bits per second in synchronous optical networks today. In addition, the new dispersion-shifted fiber technology requires half as many regenerators per mile in the network. These advances in long-distance technology have lowered costs and improved reliability. The carriers brought into being as the AT&T monopoly was broken up—MCI chief among them—have been leaders in advanced fiber technology.

## *K. Expansion of Carriers Other than AT&T since 1984*

46. The period following divestiture and the implementation of structural separation saw an explosion of service by long-distance carriers other than AT&T. During this time, MCI and Sprint expanded their nationwide networks and gained acceptance as alternatives to AT&T. Figure 3 shows the ratio of minutes of service provided by all other carriers to AT&T. Other carriers' share of the market rose from less than 10 percent of AT&T's share in 1985 to nearly 90 percent of AT&T's share in 1996.

Figure 3. Other Carriers' Minutes of Service as a Percent of AT&T's




47. MCI had 84,000 fiber miles in its network in 1985 and 567,000 fiber miles in 1995. Total fiber miles of long-distance carriers in the United States rose from 456,000 in 1985 to nearly 3 million in 1995, of which about half was owned by AT&T.[26] These statistics demonstrate that the market has undergone a significant transformation over the past decade. Divestiture was successful at stimulating major new investments with corresponding increases in market shares by new entrants to the long-distance market.

## *L. Structure and Competition*

48. The data reviewed earlier in this section effectively demonstrate the benefits that consumers have received from the development of a competitive long-distance market. In addition, the structural factors often considered by economists in judging the likelihood of the existence and continuation of competition support the conclusion that vigorous competition is serving the interests of the long-distance consumer. These factors include the concentration of sellers, trends in market shares, the ability of rivals to observe prices, barriers to entry, profitability, and returns to scale.

[26]Jonathan Kraushaar, *Fiber Deployment Update - End of Year 1995*, Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, April 1995.

*1. Concentration*

49. The domestic long-distance industry in the United States has the following competitive structure: There are four carriers with national networks (AT&T, MCI, Sprint, and WorldCom). Their current market shares are roughly 54 percent, 18 percent, 9 percent, and 5 percent, respectively.[27] There are at least 20 other carriers with annual revenues over $100 million, including Cable & Wireless and Allnet. In addition, numerous other carriers have smaller roles in the industry, based on their own facilities, capacity leased from other owners, and on reselling network services from other carriers. The FCC reports that there are 390 firms identifying themselves as long-distance carriers or resellers of interstate services.[28] The sellers other than the top four now account for 15 percent of the market.

50. AT&T's market share of just over half does not necessarily indicate a serious deficiency in competition. In any industry, but particularly in an industry where one seller has had an historical head start, one must examine a broader set of information than market share to reach conclusions about the state of competition in a market. In particular, such an examination should consider trends in market shares, barriers to entry, and the prospective profits of a new entrant. It should also consider direct evidence on price-cost margins, as I discussed earlier.

51. WorldCom is now the fourth largest long-distance carrier with nearly 4.1 million customers (presubscribed lines) as of 1995. It has grown both by building its own facilities and by acquisition of other carriers. In January 1995 WorldCom's predecessor, LDDS, acquired WilTel, the sixth largest carrier. Currently, WorldCom has about a 5 percent share of the long-distance market. Allnet is the fifth largest carrier with 1.5 million customers as of 1995. Allnet has achieved its growth as a reseller. In 1995 Frontier Communications acquired Allnet's parent. Their combined market share is about two percent of the market. These two firms are just two of the many players who are aggressively challenging AT&T, MCI, and Sprint. At present, there are 130 facilities-based long-distance carriers and 260 resellers who are actively recruiting customers.

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[27] *Long Distance Market Share, Second Quarter 1996*, Table 6, Quarterly Toll Revenues Reported to Shareholders, Industrial Analysis Division, Common Carrier Bureau, Federal Communications Commission, September 1996.

[28] *Op. cit.*, Table 1.

52. The market contains many aggressive, successful carriers who have every intention of taking as much business as they can away from the larger carriers. Executives in the industry who are constantly fighting to retain customers solicited by WorldCom, Allnet, and other aggressive sellers would be amused at a portrayal of their industry as a comfortable club with just three members who have agreed not to poach on each other's territories. These carriers could expand rapidly if competition among the larger carriers were inadequate and left prices above competitive levels. Further, the smaller carriers are increasing competition in the market through consolidations that result in a number of highly successful entities such as Frontier Communications.

53. The smaller carriers thrive on the availability of fiber capacity in the lease market. Several carriers, such as WorldCom, have an important business in building and leasing fiber capacity to other long-distance carriers. Lease customers include the major carriers as well as the smaller interexchange carriers.

54. Aggressive rivalry from the other larger carriers—MCI, Sprint, and WorldCom—together with the presence of numerous smaller carriers now accounting for 15 percent of the market has been effective in promoting competition in the long-distance market even though AT&T remains the largest long-distance carrier.

*2. Diminishing Concentration*

54. The changes in and current levels of market share of the long-distance carriers reveal a vigorously competitive market. Thirteen years have passed since divestiture opened the long-distance market. AT&T still has a majority share, but it continues to lose share—from 65 percent in 1990 to 53 percent in 1995—to all of its rivals. What market share AT&T still has, it retained only by competitive response to the aggressive attempts of its rivals to lure away its business. MCI and Sprint, through combative pricing and pursuit of customers, have raised their combined market shares, to 28 percent as of 1995, up from 24 percent in 1990. The rise in MCI's and Sprint's market shares accounts for not about a third of AT&T's loss of share. The remainder—two-thirds—of AT&T's loss was the gain of smaller, but fast-growing and successful, carriers. Remarkably, Professor Schmalensee considers the success of firms other than MCI and Sprint in taking business away from AT&T to confirm his diagnosis that AT&T, MCI, and Sprint are a cozy cartel. It is hard to think of a pattern of changes in market shares that would not cause him to diagnose inadequate competition. Would he have found growing

competition if the combined market share of the three largest firms had grown recently?

55. Measured by economists' favored index of market concentration, the Herfindahl-Hirschman "HH" index, long-distance service has become ever more competitive with the passage of time. The HH index for 1996 was at a level only half of what it was in 1987. With a continuation of the downward trend observed continuously since divestiture, the long-distance industry will enter the range of a relatively unconcentrated industry within the next 10 years or so.

55. One way that the smaller players are increasing competition in the long-distance market is through consolidation. Consolidation among the smaller carriers has resulted in a smaller number of more successful entities, such as WorldCom, which has made about 12 acquisitions in the last five years. WorldCom's revenues are projected to continue to grow at about 20 percent for next year.[29] Another carrier, Allnet Communications Services, specializes in long-distance services for small and medium-sized businesses. Allnet offers nationwide service over leased transmission facilities that are all digital. It is profitable on revenue of about $827 million.

*3. Communication of Prices to Rivals*

56. Economic analysis of the relation between competition and rivals' observation of price has stressed that the central question is whether a firm can take its rivals by surprise by offering terms to prospective customers that the rivals cannot match immediately. If a smaller firm can attract a significant number of customers before its rivals respond, competition is enhanced because the firm can expand relative to its larger rival or rivals. Even a one-day advantage can be crucial—in the airline business, one carrier can run a media blitz for a special low-price offer for a single day and book a large amount of business, even if the other carriers respond with their own blitzes the next day. In the residential long-distance business, one important tool is the signup bonus. The larger carriers target their rivals periodically with mass mailings offering bonuses—the rivals learn about the tactic only after it occurs. Promotional bargain offerings come at such a fast and furious pace that rivals cannot respond quickly enough to erase the temporary advantage that each offer provides to the carrier making the offer.

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[29] *Telecom Services - Long Distance, op. cit.*, Table 5.

57. The observability of prices by rivals is a significant issue in markets with high barriers to entry and small numbers of firms. But in the long-distance market, with hundreds of sellers, a smaller seller need not fear that its larger rivals will respond to the prices it sets. The small firm can publicize its prices as widely as it chooses. Smaller firms find viable niches in the market, knowing that larger rivals would sacrifice too much profit from their existing customers if they matched the terms that were being offered by the smaller firms to a few of its customers. The combined effect of the hundred or so smaller carriers, each nibbling at the shares of the larger carriers, is to enforce a high level of competition in the market in general.

*4. Barriers to Entry*

58. Although market share information is useful, it is important to examine a broader set of information than just market shares to reach conclusions about the state of competition in a market. In particular, the examination should consider barriers to entry and the prospective profits of a new entrant. In a non-competitive industry with conspicuous barriers to entry, a new firm would make high profits if it could overcome the barriers. In long distance, regulation created an absolute barrier to entry until the 1970s. Prospective entrants knew they could make substantial profits if they were allowed to compete with AT&T, and they were willing to fight hard for the right.

59. The role of barriers to entry is prominent in all discussions of structural determinants of competition. If a small number of sellers are isolated from further competition by high barriers to entry, the likelihood of implicit collusion is higher. In my opinion, however, the barriers to entry in the long-distance business are relatively low, so actual and prospective entry keep the market competitive.

60. Potential barriers to entry in the long-distance industry include the cost of creating a network of sufficient size to compete effectively with existing carriers and the cost of attracting customers from those carriers. One form of entry would call for a completely new network of transmission facilities at the national level. This form would cost billions of dollars and would likely be unprofitable. AT&T estimates that it has spent nearly $3 billion on its fiber network excluding electronic or optoelectronic equipment.[30] It is precisely the favorable state of competition that makes such entry unprofitable. If the existing long-distance

[30] Jonathan Kraushaar, *op. cit.*

carriers were charging prices that generated excessive profits and were providing substandard service, the prospective profits to full-scale entry would be enough to induce the necessary large investment, exactly because there are no artificial barriers to entry in the long-distance market.[31]

61. Most importantly, provision of national service does not require the ownership of a full national network. If uncompetitive behavior among the larger carriers created excessive prices, the resulting profit opportunity would be seized by operators who already know how to assemble an effective national service from components available today in the lease market.

62. Even if prevailing prices generated only moderate excess profits, a different form of entry at the national level could still occur. A national network could be created from a combination of investment and leasing of existing fiber capacity, a successful strategy pursued by WorldCom and Allnet. Also, entry is possible on a smaller scale by constructing a smaller network and by reselling the services of other carriers. AT&T has more than 50 percent of its fiber dark while Sprint has nearly a quarter still dark.[32] There is an active lease market for fiber transmission facilities to support this type of competition. Again, if failure of competition among the larger players created high prices and poor service, the smaller players would expand to take advantage of the profit opportunities that such a situation would create. The technology of long-distance telephone service is well suited to competitive discipline because successful rivals can remain permanently viable.

63. Some economists have concluded that the basic transmission technology of modern long-distance service—fiber optics—has high fixed and low variable costs. In other words, according to this view, a long-distance carrier must make a large investment to be in business in the first place, but can then increase its volume of business without adding much capacity or incurring additional costs that rise with volume. But this view fails to consider the flexibility of long-distance operations. In particular, the ownership of facilities and the provision of long-distance service are not linked in the way that the analysis assumes. The United States has an active market in leased communications facilities that supports a much more flexible industry with essentially constant returns to scale. The market easily supports active competition among many long-distance carriers.

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[31]An example of an artificial barrier to entry would be regulation or a crucial patent held by one of the carriers.

[32] Jonathan Kraushaar, *op. cit.*

64. Analyses of barriers to entry have stressed the importance of sunk costs, rather than the total costs of entry. A sunk cost is one that cannot be recovered if entry is not successful. Few of the costs of transmission capacity in the long-distance business are sunk, because there is an active market where an unsuccessful entrant in retail long distance could sell or lease facilities to other retail sellers. In this respect, the long-distance market is quite different from the local market—in that market, the investment of an unsuccessful entrant may have little resale value, so sunk costs are a more important barrier to entry in local service than in long distance.

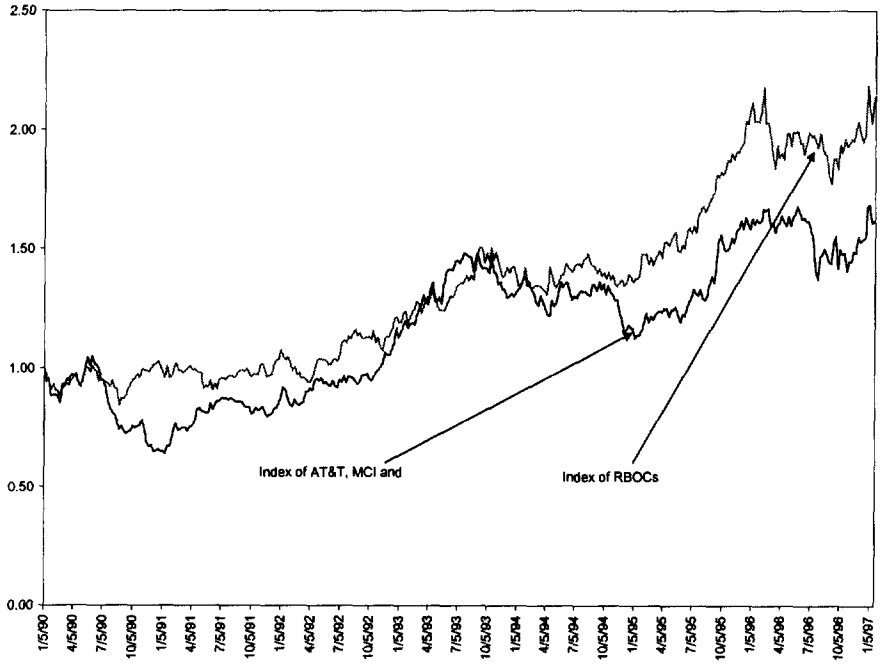
*5. Profit*

65. If existing long-distance carriers were charging prices that generated excessive profits and were providing substandard service, the profits of a prospective entrant would be enough to induce the necessary investment for full-scale entry because there are no artificial barriers to entry in the long-distance market. Even if prevailing prices generated only moderate excess profits, a different form of entry at the national level, or entry on a regional level, could still occur. Today, 13 years after regulatory barriers to entry were removed, the entry of around 390 carriers of different sizes has exhausted the profits from entry. As a result, the long-distance market is substantially competitive, and the ease of entry ensures that the market will remain competitive in the future.

66. Where competition is weak, firms can overprice their products and enjoy abnormal profits from their market power. One way to consider profitability is to study data on stock market values. The market places a value on the future stream of profit. Figure 4 compares an index of AT&T, MCI, and Sprint adjusted stock prices to a similar index of adjusted stock prices for the Bell Operating Companies. The adjusted stock price is the value of an initial investment of $1 with dividends continuously reinvested in the same stock. Each line in Figure 4 is the value-weighted average of the underlying individual stocks. The figure shows that, since the beginning of the decade, the Bells have outperformed AT&T, MCI, and Sprint in the stock market.[33]

[33] Data were compiled from TradeLine and represent monthly stock prices adjusted for capital changes and cash and non-cash dividends. An index, beginning 1/1/90, was constructed for each company. Then indices for the long-distance carriers and the RBOCs were constructed using market values as of January 20, 1997.

Figure 4. Adjusted Stock Prices for Long-Distance Carriers and Bells




67. Another way to see how the stock market views competition in the telephone industry is to compare stock-market values to the book values of assets. Almost all firms trade well above book value, because of intangible assets not included in their accounts, but firms with market power are valued even higher because of the capital value of the extra profits associated with market power. Here are recent data on market to book value ratios for long distance carriers and local telephone

| *Company* | *Ratio of Market to Book Value* |
|---|---|
| ATT | 2.7 |
| MCI | 2.4 |
| Sprint | 1.8 |
| WorldCom | 8.0 |
| Ameritech | 4.4 |
| Bell Atlantic | 3.6 |
| BellSouth | 3.2 |
| Nynex | 3.0 |
| Pacific Telesis | 6.2 |
| SBC | 4.6 |
| US West | 4.3 |
| SNET | 5.3 |

Source: Morningstar StockTools Database

The only long-distance carrier with a lofty market value in relation to book value is WorldCom, not usually identified as a member of the comfortable long-distance oligopoly. AT&T, MCI, and Sprint—the usual members of that group—are at the bottom. The stars, apart from WorldCom, are Pacific Telesis and SNET.

68. If, as some economists have concluded, the long-distance industry earns abnormal profit from the market power that results from limited competition, then the profits of the established sellers should exceed the profits of the would-be rivals that are locked out of the market. A comparison of AT&T to WorldCom suggests just the opposite. The stock market value of AT&T is slightly over $1 of value per dollar of revenue. WorldCom commands over $2 of value per dollar of

revenue.[34] The stock market believes that AT&T's position is likely to continue to wither compared to other sellers such as WorldCom. AT&T's business is concentrated in traditional long-distance products, whereas WorldCom has found new specialties that the market considers more promising.

### 6. *Returns to Scale*

69. Competition cannot flourish in an industry where the technology has important returns to scale. When large scale brings lower cost, one firm will dominate and its cost advantage will prevent effective competition from smaller rivals. All the evidence suggests the absence of increasing returns in the long-distance market. AT&T is approximately three times as large as MCI. Under returns to scale, AT&T should have substantially lower costs per minute of service and thus higher profits. But, in fact, AT&T and MCI are about equally profitable. Further, many carriers exist in the market that are much smaller than MCI, and these small carriers are not only viable, but profitable and growing.

## *M. Conclusion on Competition and Collusion*

70. Divestiture and the opening of the long-distance market to competition have produced a vibrant, successful long-distance industry in the United States. Since competition was introduced to the long-distance market, there has been a large and continuing flow of technological innovations. The performance of the industry in the past decade has been a clear success, with substantial declines in prices relative to other products and the rapid development and dissemination of advanced technologies by the competitive long-distance carriers.

71. The force of competition among the four major long-distance carriers (AT&T, WorldCom, MCI, and Sprint) and dozens of other significant carriers has pushed prices down to the level where only an efficient firm with perceptive management can make a profit. But competition in long distance does not take the precise form of textbook perfect competition. For example, AT&T's brand name and consumer inertia dating back to the time when the company was a monopoly gives a continuing, though declining, advantage to AT&T.

72. After divestiture provided the opportunity for full competition in the long-distance market in the United States, competition acted quickly to lower prices.

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[34] Morningstar StockTools Database.

Increasing competition and rising productivity were driving forces, along with declining access charges, in lowering long-distance prices. The decline in the price of long distance was most rapid just after divestiture, but has continued since 1987. The economic analysis of the benefits of competition teaches that competition will drive prices toward the level of cost. During the transition from noncompetitive prices to competitive prices, large price reductions will occur. After the benefits of competition are achieved, the economy continues to enjoy low prices but cannot expect prices to continue falling at their earlier rate. Future declines in long-distance prices will come from continuing improvements in productivity and from any further declines in access charges that are granted by regulators or that result from structural changes in local telephone service.

73. Professor Schmalensee's contrary diagnosis of tacit collusion does not withstand the evidence, in my view. His diagnosis makes little sense for an industry with numerous sellers, many of whom are small enough to avoid any strategic response from the four major sellers, but collectively large enough to exploit any gap between price and cost. As he notes, these sellers—currently ranked number 5 and smaller—have grown collectively in recent years and now account for an important share of the total market.[35]

74. In my opinion, the performance of the industry suggests vigorous competition with large consumer benefits even though AT&T still has about half of the U.S. long-distance market. There are neither natural barriers to entry nor barriers created by law in the market. If competition were inadequate, new firms would enter and those currently on the periphery would move into the core.

## *IV. Effects of Control of a Long-Distance Carrier by a Local Telephone Company*

### *A. Introduction and Summary*

75. Southwestern Bell's application to sell long-distance services in Oklahoma raises questions about the effect of vertical integration on cooperation among the

[35] *Schmalensee Affidavit*, p. 8.

independent firms that collaborate to form the national telephone network. Experience since divestiture has proven that independent firms can work together to achieve a high level of service. The telephone system of the United States, based on cooperation, stands far above the vertically integrated systems of every other country in terms of value delivered to the consumer. Vertical integration may threaten cooperation. The principle of structural separation, embodied in the Telecommunications Act of 1996, recognizes that enforcing the independence of long-distance carriers may be in the consumer's interest.

76. At least for the next several years, the great majority of long-distance calls will be handled at one or both ends by local telephone companies such as Southwestern Bell that are close to monopolists in the access market. Access charges will be regulated at levels above cost. Much of the material in this Part deals with the implications of this situation. Control of a long-distance carrier by the regulated monopoly access seller creates strong incentives for that seller to withdraw the cooperation that it has earlier provided to long-distance carriers. Analyses suggesting otherwise are refuted here.

77. Proponents of permitting local telephone companies to control long-distance carriers have suggested that the addition of a new carrier would break down high uncompetitive pricing in the market. In the first place, as the previous part demonstrated, long-distance prices are not high in relation to cost, and there is little room to push them down further. Second, there is little reason to believe, either as a matter of economic analysis or from experience so far in markets where local phone companies have assumed control of a long-distance carrier, that prices will fall.

## B. *Effect on Long-Distance Competition from Control of a Carrier by the Local Telephone Company*

78. Many discussions of the economic effects of permitting local telephone companies to control long-distance carriers presume that another long-distance seller will improve competition and lower the price of long-distance services. The primary reason to be skeptical of this presumption is the evidence presented in Part III showing the advanced degree of competition in the long-distance market. What could a local telephone company do that companies such as WorldCom—already in nationwide operation—have not already done?

79. Standard economic analysis concludes that a local carrier's control of a long-distance carrier would not increase the number of long-distance carriers in the long run. Entry is driven by potential profit, and industry equilibrium occurs at the point where there are sufficiently many sellers so that the incremental profit to one more seller is zero. The number of sellers is determined by this condition. Consequently, if the local carrier enters the market, it means that there will be one fewer other seller in the market in equilibrium. If the adverse effects on price and quantity from lack of cooperation with downstream rivals are set aside, then price and quantity are the same whether the equilibrium includes a long-distance seller controlled by the local carrier or not.

## C. *General Analysis of Cooperation and Vertical Integration*

80. In general, absent vertical integration, upstream firms cooperate with their downstream customers. On the other hand, horizontal rivals in the same market do not usually cooperate with each other—cooperation is the antithesis of competition. Once an upstream supplier integrates vertically into the downstream market, it becomes the rival of its downstream customers. Accordingly, it is unrealistic to expect the upstream firm to cooperate with its rivals in the downstream market. Yet cooperation between upstream and downstream firms is essential for consumer welfare. Withholding cooperation is a form of raising rivals' costs.

81. The larger the role of the vertically integrated firm in the upstream market, the greater the strain between cooperation and rivalry. When the upstream market is competitive, and no seller has a significant market share, failure of a vertically integrated firm to cooperate is innocuous—the downstream purchaser can find an alternative upstream supplier who will cooperate if the vertically integrated supplier is uncooperative. Further, competitive markets can find the socially optimal degree of vertical integration. If there are efficiencies of integration, then competitive markets take the form of competition among many vertically integrated firms.

82. On the other hand, when the upstream seller has a significant share of the upstream market, the breakdown of cooperation with downstream customers upon vertical integration of the upstream seller becomes important. Unless cooperative upstream sellers can completely displace the sales of the less cooperative vertically integrated firm, the tension between cooperation and rivalry